Climatological Data for December, 1909.

DISTRICT No. 11, CALIFORNIA.

Prof. ALEXANDER G. McADIE, District Editor.

The month was one of typical winter weather in this portion of the Pacific coast. There were frequent and heavy rains, and at intervals heavy frosts. There were more than the usual number of frosts and the temperature on several mornings fell below the danger point in the citrus fruit belt. The mean temperature of the State as a whole was nearly 3° below the normal, but in the southern counties a better idea of the general character of the month can be had from the number of temperatures below the freezing point that were recorded even at points close to the coast. Low morning temperatures at points in the interior are, of course, not infrequent during the winter months, but coast temperatures as a rule seldom fall below 32°. The precipitation was much above that of a normal December. In a general average for the State the rainfall, including melted snow, was about 50 per cent in excess of that of a normal month. The precipitation varied from nothing at points in San Bernardino County to over 20 inches in the northern coast and mountain sections. The greatest snowfall recorded was at Tamarack, the monthly total being 92 inches, and the next greatest was 76 inches at Fordyce Dam. At the beginning of the month the snow covering, at elevations of about 7,000 feet and north of the 35th parallel, was fairly represented by a depth of 2 inches, while at the close of the month there was an approximate depth of 45 inches. There was not much melting and but a moderate run-off.

Comparing the present month with previous years, the following figures give the mean temperature: 1897, 44.4°; 1898, 44.4°; 1899, 45.8°; 1900, 47.3°; 1901, 47.4°; 1902, 46.6°; 1903, 48.0°; 1904, 47.2°; 1905, 45.3°; 1906, 47.3°; 1907, 48.3°; 1908, 43.2°; 1909, 43.3°. The month was therefore about as cool as the previous December and much cooler than any other December during the entire period. During the first decade temperatures were for the most part normal or slightly above, owing to the prevalence of southerly winds and the recurrence of barometric depressions over the northern half of the Pacific slope. During the second decade there was a noticeable change in pressure distribution, with a slow-moving or stagnant anticyclonic circulation. The winds were mostly from the north, and at times, as on December 13 and 18, strong. Frosts were frequent during this period, although the afternoon temperatures would sometimes rise to 70°. The period lasted until the 19th. One of the most interesting dates of the month was December 18, when a strong north wind, commomly known as "Santa Ana," thrashed the trees and fruits, whipping off, it is estimated, about 10 per cent of the oranges and lemons. This was followed by heavy frosts. At San Diego the temperature fell to 36° on the morning of the 19th, which is a very low temperature for that station and indicating temperatures below freezing in the lemon and orange districts back from the coast. Ample warning was given to the fruit interests. The third decade was one of unsettled weather, due to the passage southward of several minor depressions, the month closing with a well-marked storm which in the southern coast counties, by reason of the heavy rains and washouts due thereto, caused much damage. The rains continued into the first few days of January, resulting in floods in southern California. The property loss was estimated to be in the neighborhood of $100,000. The Santa Ana River overflowed its banks and much celery land was inundated. Transportation and power companies suffered and there was considerable interruption of general and local passenger service. It was said that the rainfall in the San Gabriel Canyon, as measured by the power company officials, was 10.50 inches in 26 hours and was the heaviest recorded in a period of 15 years. Considerable damage was done to telegraph and telephone wires in all sections. The following heavy 24-hour rainfalls were reported on the 31st: Azusa, 4.40 inches; Claremont, 2.85; Glenn Ranch, 3.89; Los Angeles, 2.15; Lowe Observatory, 8.50; Lytle Creek, 7.50; Mono Ranch, 4.64; Newhall, 4.46; Ojai Valley, 4.87; Ozena, 4.00; Pasadena, 3.28; Rialto, 6.70; San Bernardino, 2.90; Santa Barbara, 2.30; Sierra Madre, 3.85; Surrey, 4.30; Upland, 4.00.

The following notes on conditions during December are contributed by cooperative observers:

Azusa.—The rain on the 31st, ending January 1, amounted to 6.11 inches, and caused severe floods. The San Gabriel River was a raging torrent. Electric tracks were washed out, one span of the county bridge went out, and a small bridge on the Santa Fe Railroad went down with the engine.—*Alfred P. Griffith.*

Durham.—The snowfall on the 5th was estimated to be 6 inches, and remained on the ground in sheltered places 3 or 4 days. The temperature was unusually low.—*R. W. Durham.*

Independence.—December was the coldest on record at this station, with a mean monthly temperature of 25.9°. Old residents state that on December 3, 1873, there was a cold wave here with temperatures equally as low as the current month and a snowfall of about 4 feet. The ground, where free from snow, is frozen to a depth of from 10 to 15 inches. This is unprecedented and unlooked for. The water mains are placed at a depth of 12 to 18 inches, and half the town is without water from the frozen mains. Owens River is not frozen over, but ponds and lakes are entirely frozen over.—*E. M. Brooks.*

Madeline.—The month has been unusually cold and the ground is frozen 12 inches deep. Ice is being cut 14 inches thick.—*J. H. Williams.*

Magalia.—The winter weather to date has been much more severe than for several years past, with more rain and snow.—*A. F. Rice.*

Orland.—Progress on the Orland Project for the month has been satisfactory. All contractors are at work on the distribution system. A small force is at work on the south main canal, enlarging and building concrete structures. The East Park dam is at an elevation of 27 feet above the creek bed.—*M. E. Ready.*

Summerdale.—The heaviest rain on record at this station for any 24 hours, 7.52 inches, fell on the 31st. The total precipitation for the year 1909 is 89.16 inches.—*J. H. Lowry.*

Three Rivers.—On the morning of the 9th the water in the river was higher at this point than it has been for 18 years.—*E. D. Barton.*

Tulare.—There were no killing frosts during the month, although the temperature fell to 30° on the 4th and 15th, and 32° on the 3d, 16th, and 17th.—*John Tuohy.*

Very severe winter conditions have also been experienced on the Klamath Project. Fortunately we never contemplate much work at this point during the winter months, as there is always more or less frost. We had, however, planned to do a good deal of work along the southern shore of Tule Lake, using a large power launch as the principal means of transportation to this remote locality. Tule Lake seldom freezes over; but I understand this year a large part of the lake has frozen over and operations have been so far rendered impossible.

Severe weather conditions have also been reported as far south as Fallon, Nev.—*E. G. Hopson, Supervising Engineer.*

EXCESSIVELY HEAVY PRECIPITATION IN CALIFORNIA DURING 1909.

	Inches.
Bear Valley, Nevada Co.	119.39
Blue Canon	110.72
Bowmans Dam	113.85
Branscomb	130.14
Brush Creek	104.65
Camptonville	136.38
Deer Creek	123.31
Delta	114.85
Downieville	101.64
Fordyce Dam	125.28
Head Dam	100.14
Inskip	134.68
Kennett	115.92
La Porte	141.40
Magalia	150.62
Monumental	*153.64*
Nimshew	103.26
Pilot Creek	117.61
Stirling City	108.63
Upper Mattole	121.79
West Branch	119.45
Woodleaf	125.28

The greatest previous recorded annual precipitation was 139.20 inches at Monumental in 1907.